

What is claimed is:

Sub A17

1. A digital data modulator, comprising:
a source of a digital data signal;
5 an encoder, for encoding the digital data using a variable pulse width code;
a pulse signal generator, generating respective pulses representing edges of the encoded digital data signal; and
a carrier signal generator, for generating a carrier
10 signal having carrier pulses corresponding to the respective pulses.

2. The modulator of claim 1 wherein the variable pulse width codes is a variable aperture code.

3. The modulator of claim 1 wherein:
the encoder generates an encoded digital data signal having leading edges and trailing edges;
the pulse signal generator generates positive pulses in
20 response to a first edge in the digital data signal and negative pulses in response to a different second edge in the digital data signal; and
the carrier signal generator generates a carrier pulse having a first phase in response to a positive pulse and having
25 a second phase in response to a negative pulse.

4. The modulator of claim 3 wherein the first phase is substantially 180 degrees out of phase with the second phase;
said first edge is a leading edge; and
30 said second edge is a trailing edge.

5. The modulator of claim 1 wherein the pulse signal generator comprises:
a differentiator, coupled to the encoder; and
35 a level detector, coupled to the differentiator.

6. The modulator of claim 1 wherein the carrier signal generator comprises:

a carrier oscillator; and

5 a mixer, having a first input terminal coupled to the pulse signal generator and a second input terminal coupled to the carrier oscillator.

7. The modulator of claim 6 further comprising a
10 bandpass filter coupled to an output terminal of the mixer.

8. A digital data demodulator, comprising:

a source of a modulated signal, having carrier pulses spaced relative to each other to represent a variable pulse
15 width encoded digital data signal;

a detector for generating a variable pulse width encoded signal in response to received carrier pulses;

a decoder for decoding the variable pulse width encoded signal to generate the digital data signal.
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9. The demodulator of claim 8 wherein the variable pulse width code is a variable aperture code.

10. The demodulator of claim 8 wherein the carrier pulses
25 have one of a first phase and a second phase.

11. The demodulator of claim 10 wherein the first phase is substantially 180 degrees out of phase with the second phase.
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12. The demodulator of claim 8 further comprising, coupled between the modulated signal source and the detector:

a bandpass filter;

an integrator; and

35 a limiting amplifier.

13. The demodulator of claim 8 further comprising:

A windowing timer, coupled to the detector; for generating a windowing signal in the temporal neighborhood when a carrier pulse is expected; and wherein:

The detector is enabled by the windowing signal.

14. A digital data modulation method comprising the steps Of:

providing a source of a digital data signal;
encoding the digital data using a variable pulse width code;

generating respective pulses representing edges of the encoded digital data signal; and

generating a carrier signal having carrier pulses corresponding to the respective pulses.

15. A digital data demodulation method comprising the steps of:

providing a source of a modulated signal, having carrier pulses spaced relative to each other to represent a variable pulse width encoded digital data signal;

generating a variable pulse width encoded signal in response to received carrier pulses;

decoding the variable pulse width encoded signal to generate the digital data signal.